

HOW TO...

Get your sums right

If you use a calculator to perform the same sums over and over, a spreadsheet will save you a lot of time. Jennifer Bagley explains how to make things add up easily

Your teacher and your parents were right: maths is something you need to use in everyday life. That doesn't make it any less tedious. Fortunately, spreadsheet programs can do all the boring bits for you. Here we'll show you how to get your spreadsheet to add up figures for you quickly and easily.

We've used Excel 2003; although the features employed will be available in earlier versions, some of the commands and menu names may differ slightly. We'll also show you what you can do in the latest versions of Ability Spreadsheet and Works Spreadsheet. If you'd like to follow this tutorial using the same figures shown in the screenshots, download the spreadsheet called sums.xls from this month's cover disc.

1 If you have a row or column of numbers in a straight line, with no gaps between them, the easiest way to add them up is to use the AutoSum button on the toolbar. Click in the cell at the bottom of the numbers to be added (or to the right if they're in a row) and click on the button with the Greek sigma symbol, Σ . If you hover the cursor over the button, its name will pop up.

2 This inserts the simple add function `=SUM`, which tells the spreadsheet to add up the figures in the row or column. However, it doesn't work if there are any blank cells between

your data. In this case you'd need to enter a formula manually. The quickest way to do this would be to enter `=SUM(` in the sheet, then the range of cells you want to add, followed by a close bracket. In our example, we'd enter `=SUM(B1:B6)`.

Although Ability Spreadsheet uses two full stops instead of a colon, if you enter a colon here it will change it automatically for you. As you follow this tutorial in any of the three programs, you may need to format a cell so that it appears as a monetary value. To do this, right-click on the cell, select Format or Format Cells and then select Currency from the list on the Number tab.

3 For the purposes of this tutorial, our spreadsheet is quite simple. However, most spreadsheets contain longer lists of data; in these instances, jotting down some subtotals quickly can be very handy. This feature is not available in Ability or Works, so if you use these programs skip to Step 9.

To create a subtotal, first make sure the spreadsheet is formatted correctly. Each column needs a label, and there can't be any gaps or empty rows. In our example, we want to subtotal the money raised by each team. Click in the column you want to group your

subtotals by; if you're using our data that's column A. Then click on the Sort Ascending button on the toolbar. Alternatively, you could click on Sort Descending. Either method is fine. What we are doing here is grouping together all the items that we want to subtotal.

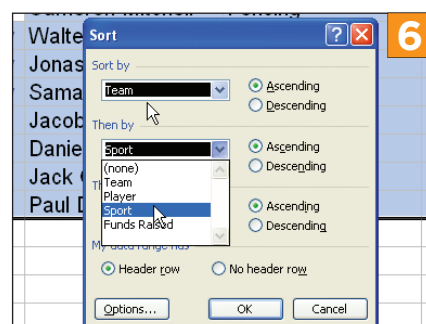
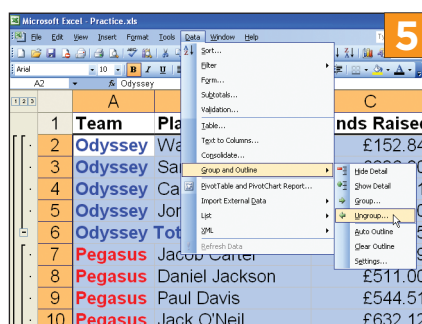
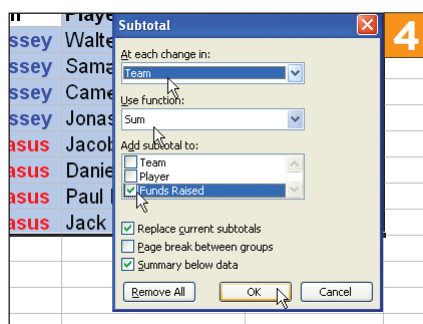
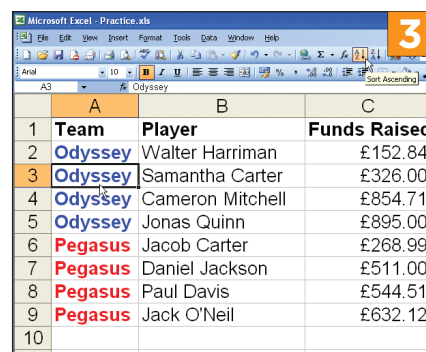
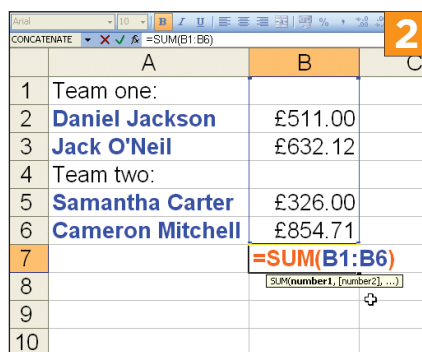
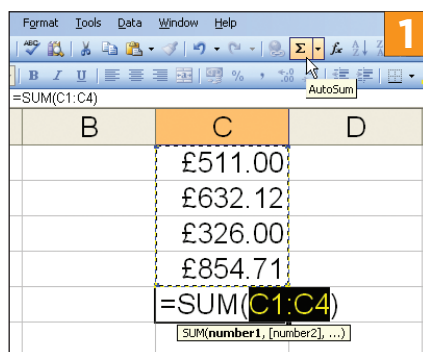
4 From the Data menu select Subtotals. In the 'At each change in' box, select the column that you're grouping by. In our example, this is Team. We want to add the amounts in the Funds Raised column for our subtotals, so in the Use function box select Sum. The 'Add subtotal to' box lists the columns in your spreadsheet. Tick the one that has the values to be subtotaled. In our example, this is Funds Raised.

There are three options at the bottom. The first is self-explanatory. If you have a large amount of data to subtotal, having each subtotal on a separate page would be handy. If that's the case, tick the box next to Page break between groups. Finally, if you want the subtotals to appear above the subtotaled rows instead of below, clear the box next to the last option. Click OK.

5 Subtotals have been added for each of the two teams, and a grand total has been added

EXPERT TIP

To remove subtotals quickly from a spreadsheet, click on a cell in the column in which the subtotals appear. Select Subtotals from the Data menu then click on Remove All. If a circular formula error message appears, click OK.



right at the bottom of column C. As you can see from the screenshot for this step, the rows have been grouped. At the top of the grid, to the left of the column headers, there are now three little boxes labelled 1, 2 and 3. If you click on 2, all the rows containing team members will be hidden and only the subtotals for the teams will be visible. To show them again, click on the little + symbols under the 2, or on the 3 box. To remove a group, highlight the grouped rows or columns, and from the Data menu, select Group and Outline then Ungroup.

6 How about subtotalling items within the subtotalled groups? Show the data on the second spreadsheet by clicking on the Sport tab. For this example spreadsheet we might want to see how much each team raised, and within the teams, how much each sport contributed to the team's total; these are called nested subtotals.

We need to sort the columns for each nested subtotal. Click in the Team column and select Sort from the Data menu. In the first 'Sort by' section, select Team; our outer subtotals will be for each of the two teams. In the 'Then by' section, select Sport; this will be our inner subtotal.

7 Repeat Step 4 to get subtotals for the two teams. Then go back to the Data menu and select Subtotals again. In the 'At each change in' box, select the column you want to group to find the nested subtotal. In our example, it is Sport. Select Funds Raised in the 'Add subtotal to' box. Make sure the box next to Replace current subtotals is clear. Click OK. You can repeat this for other nested subtotals.

8 We can glean more information than just the subtotals from these numbers. For example, what about finding out the average

amount raised by individuals? In Excel, click in a cell at the bottom of the Funds Raised Column. Enter =SUBTOTAL(1, D2:D18). The '1' is the Function Number (Function_num) for Average. For a list of the function numbers and what they stand for, see the Function Numbers table below.

We've included the cells D2 to D18, but Excel will ignore the cells containing subtotals. It will just calculate the average using the cells containing funds raised by the team members. Test it out by trying to delete a subtotal. The amount in the Average cell won't change. If you now delete a team member, the average amount will update automatically. For more on subtotals in Excel, go to Step 10.

9 To calculate an average in Ability Spreadsheet, you need to enter the formula =AVG(D2..D9). The part of the formula in brackets tells Ability which cells to use to find the average. Because Ability Spreadsheet doesn't have the Subtotal feature, any subtotals entered manually will be counted when it works out the average for the column. Therefore, you need to make sure these are removed first. The same applies to Works. There's a handy tool in Works to make using functions easier, shown below in the screenshot. Click in the cell where you want the average to appear. Then click on the Easy

Calc button on the toolbar. Its icon looks like a calculator. Select Average from the list and click Next. Enter the range of cells, for example D2:D9, or click on the Minimize dialog button and highlight the relevant cells. When you click the button again, you'll see that Works has filled in the range of cells for you. Click Next, and you can use the same method to enter the cell

FUNCTION NUMBERS	
Function	Function number
AVERAGE	1
COUNT	2
COUNTA	3
MAX	4
MIN	5
PRODUCT	6
STDEV	7
STDEVP	8
SUM	9
VAR	10
VARP	11

HANDY TIP

The appearance of # symbols in a cell indicates that the contents are too big to display fully. Widen the cell and the number will appear.

in which you'd like the average to appear. Finally click Finish.

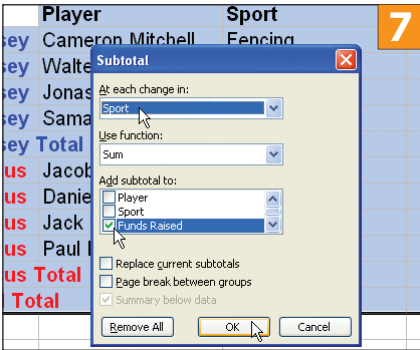
10 You may want to get totals for the different sports.

We don't want to try and add yet another nested subtotal as it will make the table hard to read. Instead, we're going to use the SUMIF function to total up each sport at the bottom of the table (this function is not available in Works).

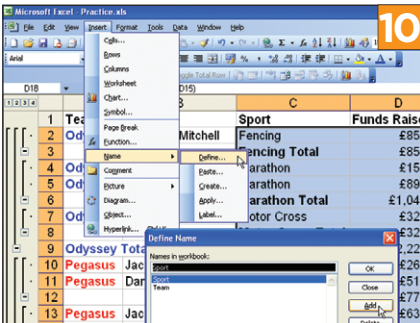
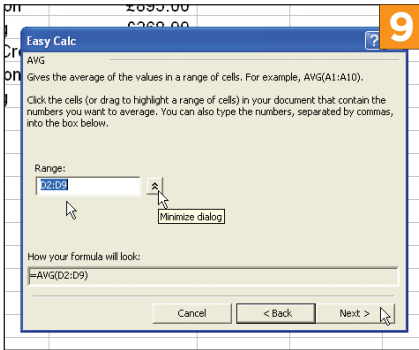
First, we need to name a range. Highlight the cells in the Sport column and in the Funds Raised column; in Ability, just highlight the cells in the Sport column. From the Insert menu select Name (Range Name in Ability) then Define. Enter a name for the range, such as Sport. Click Add, then OK, or Close in Ability. Then, if you're using Excel, go to the next step. Ability users can skip this step.

11 Click in a cell below the final total. For clarity, leave a row or two between them. Enter =SUMIF(Sport,"Marathon",D2:D18). SUMIF will add up values within a range according to a specified criterion. In this case, the named range Sport covers the cells in columns C and D. Marathon, entered in quotation marks, tells the formula to look only at values associated with that sport. The last part of the formula is the Sum_range. This doesn't have to be the same size and shape as the range, but it needs to be within the limits of the range. Do one SUMIF for each of the sports in your list. When the list is updated, the totals for each sport will update automatically as well.

12 Ability builds formulae in a different fashion to Excel, but the SUMIF function works in the same way. It adds up values within a range according to a specified criterion. In this case, the range is Sport, made up of cells C2 to C9 as defined in Step 9. Click in a cell below the final total, leaving a row or two between them. Enter =SUMIF(Sport,{"Marathon"},D2..D9).



Fencing	£268.99	
Fencing	£511.00	
Fencing Total	£779.99	
Marathon	£632.12	
Marathon Total	£632.12	
Motor Cross	£544.51	
Motor Cross Total	£544.51	
	£1,956.62	
	£4,185.17	
Average	=SUBTOTAL(1,D2:D18)	



Marathon Total	£632.12
Motor Cross	£544.51
Motor Cross Total	£544.51
	£1,956.62
	£4,185.17
Marathon total	=SUMIF(Sport, "Marathon", D2:D18)

Motor Cross	£326
Marathon	£895.00
Fencing	£268.99
Motor Cross	£544.51
Marathon	£632.12
Fencing	£511.00
= SUMIF (Sport, {"Marathon"}, D2..D9)	
TOTAL Fencing	£1634.70
TOTAL Motor Cross	£779.99